CLAIMS

Sub A7

1. An optical system comprising

a light source for emission of a first light beam

a first beamsplitter having a dielectric coating, the first beamsplitter being adapted to transmit/reflect a secondary output light beam in response to said first light beam being incident upon said beamsplitter, and further being adapted to reflect/transmit a primary output light beam in response to said first light beam being incident upon said beamsplitter, the power of the secondary output light beam being a substantially fixed percentage of the power of the primary output light beam,

a detector being adapted to measure the power of the secondary output light beam, and providing on the basis of the measured power a control signal to the light source, so that parameters of the first light source are adjusted in such a way that the output power of the primary output light beam is kept substantially constant.

2. A system according to claim 1, wherein the substantially fixed percentage of the secondary output light beam is substantially invariant to wavelength variations of the first light beam within a predetermined wavelength range.

3. A system according to claim 1, wherein the transmittance and/or reflection spectra of the dielectric coating of the beamsplitter is/are substantially invariant to wavelength changes of the first light beam in a predetermined wavelength range.

4. A system according to claim 2, wherein the predetermined wavelength range is between approximately 780 nm and approximately 830 nm.

5. A system according to claim 2, wherein the predetermined wavelength range is between approximately 620 nm and approximately 650 nm.

6. A system according to claim 2, wherein the predetermined wavelength range is between approximately 910 nm and approximately 1100 nm.

7. A system according to claim 2, wherein the predetermined wavelength range is between approximately 1450 nm and approximately 1550 nm.

8. A system according to claim 2, wherein the predetermined wavelength range is between approximately 1600 nm and approximately 1900 nm.

9. A system according to claim 2, wherein the predetermined wavelength range is between approximately 520 nm and approximately 585 nm.

10. A system according to claim 1, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, induces a variation in the power of the transmitted/reflected secondary light beam being within +/-10 % of the power of the transmitted/reflected secondary light beam at a given wavelength within the predetermined wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/-10% of the substantially fixed percentage at the given wavelength.

11. A system according to claim 1, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, induces a variation in the power of the transmitted/reflected secondary light beam being within +/-10 % of the average power of the transmitted/reflected secondary light beam in the given wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/-10% of the average power of the transmitted/reflected secondary output light beam in the predetermined wavelength range.

12. A system according to claim 1, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, induces a variation in the power of the transmitted/reflected secondary light beam being within +/- 5 % of the power of the transmitted/reflected secondary light beam at a given wavelength within the predetermined wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/- 5 % of the substantially fixed percentage at the given wavelength.

13. A system according to claim 1, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, induces a variation in the power of the transmitted/reflected secondary light beam being within +/- 5 % of the average power of the transmitted/reflected secondary light beam in the given wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/- 5 % of the average power of the transmitted/reflected secondary output light beam in the predetermined wavelength range.

14. A system according to claim 1, wherein the output power of the primary output light beam is kept within +/- 20% of a predetermined output power.

15. A system according to claim 1, wherein the output power of the primary output light beam is kept within +/-10 % of the predetermined output power.

16. A system according to claim 1, wherein the transmittance and/or reflection spectra of the dielectric coating of the beamsplitter is/are substantially invariant to temperature changes of the dielectric coating.

17. A system according to claim 1, wherein the substantially fixed percentage is less than 0.5%.

18. A system according to claim 1, wherein the substantially fixed percentage is less than 0.1%.

19. A system according to claim 1, wherein the light source comprises a solid state laser light source.

20. A system according to claim 1, wherein the light source comprises a wavelength tuneable laser light source.

21. A system according to claim 1, wherein the dielectric coating comprises a number of alternating layers having different indices of refraction.

22. A system according to claim 21, wherein each of the alternating layers has an index of refraction being significant of said layer.

23. A system according to claim 21, wherein the indices of refraction of the alternating layers being within a range from approximately 1.2 to approximately 2.5.

24. A system according to claim 21, wherein the dielectric coating comprises at least a first layer having an index of refraction being within a range from approximately 1.2 to approximately 1.6, and at least a second layer having an index of refraction being within a range from approximately 2.0 to approximately 2.5.

25. A system according to claim 1, wherein the dielectric coating comprises alternating layers of titanium-dioxide (TiO_2) and quartz (SiO_2).

26. A system according to claim 1, wherein the water content of the dielectric coating is minimized.

27. A method of controlling the output of an optical system, the method comprising the steps of:

- emitting, by means of a light source, a first light beam being incident upon a beamsplitter having a dielectric coating,
- reflecting/transmitting a primary output light beam by means of said beamsplitter in response to the first light beam being incident thereupon,
- transmitting/reflecting a secondary output light beam by means of said beamsplitter in response to the first light beam being incident thereupon, and in such a way that the power of the secondary output light beam is a substantially fixed percentage of the power of the primary output light beam,
- measuring the power of the secondary output light beam,
- providing, on the basis of the measured power, a control signal to the light source, and
- adjusting parameters of the first light source so that the first light beam is emitted in such a way that the output power of the primary output light beam is kept substantially constant.

28. A method according to claim 27, wherein the substantially fixed percentage is substantially invariant to wavelength variations of the first light beam within a predetermined wavelength range.

29. A method according to claim 27, wherein the transmittance and/or reflection spectra of the dielectric coating of the beamsplitter is/are substantially invariant to wavelength changes of the first light beam within a predetermined wavelength range.

30. A method according to claim 28, wherein the predetermined wavelength range is between approximately 780 nm and approximately 830 nm.

31. A method according to claim 27, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, is adapted to induce a variation in the power of the transmitted/reflected secondary light beam being within +/- 10 % of the power of the transmitted/reflected secondary light beam at a given wavelength within the predetermined wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/-10% of the substantially fixed percentage at the given wavelength.

32. A method according to claim 27, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, is adapted to induce a variation in the power of the transmitted/reflected secondary light beam being within +/- 10 % of the average power of the transmitted/reflected secondary light beam in the given wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/-10% of the average power of the transmitted/reflected secondary output light beam in the predetermined wavelength range.

33. A method according to claim 27, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, is adapted to induce a variation in the power of the transmitted/reflected secondary light beam being within +/- 5 % of the power of the transmitted/reflected secondary light beam at a given wavelength within the predetermined wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/- 5 % of the substantially fixed percentage at the given wavelength.

34. A method according to claim 27, wherein the beamsplitter, for an incident light beam having a wavelength within a predetermined wavelength range, is adapted to induce a variation in the power of the transmitted/reflected secondary light beam being within +/- 5 % of the average power of the transmitted/reflected secondary light beam in the given wavelength range so as to provide a variation in the substantially fixed percentage of the primary output light beam being within +/- 5 % of the average power of the transmitted/reflected secondary output light beam in the predetermined wavelength range.

35. A method according to claim 27, wherein the output power of the primary output light beam is kept within +/- 20% of a predetermined output power.

36. A method according to claim 27, wherein the output power of the primary output light beam is kept within +/-10 % of the predetermined output power.

37. A method according to claim 27, wherein the transmittance and/or reflection spectra of the dielectric coating of the beamsplitter is/are substantially invariant to temperature changes of the dielectric coating.

38. A method according to claim 27, wherein the substantially fixed percentage is equal to or less than 0.5%.

39. A method according to claim 27, wherein the substantially fixed percentage is equal to or less than 0.1%.

40. A method according to claim 27, wherein the dielectric coating comprises alternating layers of titanium-dioxide (TiO_2) and quartz (SiO_2).

41. A method according to claim 27, wherein the water content of the dielectric coating is minimized.